

# CM6400A

## EMI Filters with ESD Protection for Data Line Applications

### Product Description

The CM6400A is a 24-bump EMI filter with ESD protection device for data line application in a 0.4 mm pitch, 5 x 5 CSP form factor. It is fully compliant with IEC 61000-4-2 Level 4. The CM6400A is RoHS II compliant.

### Features

- 24-Bump, 1.96 mm X 1.96 mm Footprint Chip Scale Package
- These Devices are Pb-Free and are RoHS Compliant



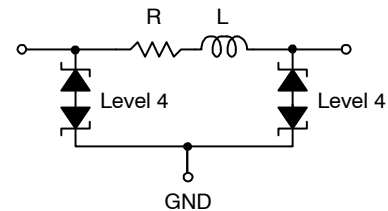
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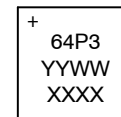
WLCSP24  
CASE 567CK

### ELECTRICAL SCHEMATIC



1 of 10 Filter Channels

### MARKING DIAGRAM



64P3 = CM6400A  
YYWW = Date Code  
XXXX = Last four digits of lot#

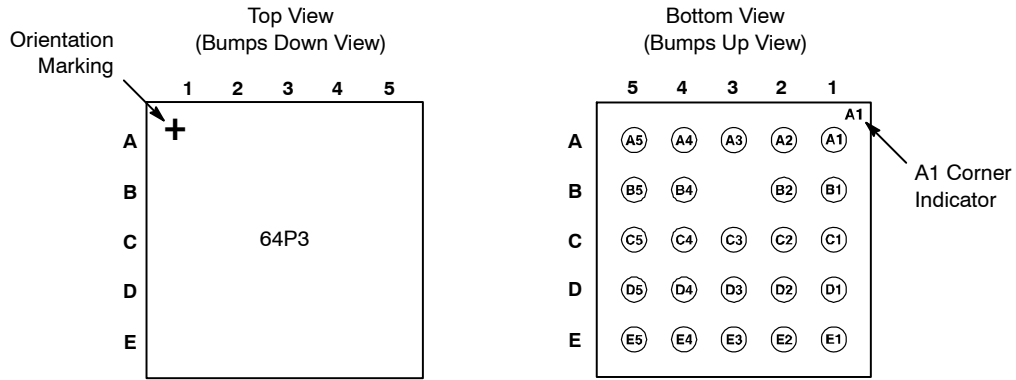
### ORDERING INFORMATION

Device	Package	Shipping†
CM6400A	CSP-24 (Pb-Free)	5000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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## PACKAGE / PINOUT DIAGRAMS



**Table 1. PIN DESCRIPTIONS**

A5 = Line 1	A4 = Line 2	A3 = GND	A2 = Line 1	A1 = Line 2
B5 = Line 3	B4 = Line 4		B2 = Line 3	B1 = Line 4
C5 = Line 5	C4 = Line 6	C3 = GND	C2 = Line 5	C1 = Line 6
D5 = Line 7	D4 = Line 8	D3 = GND	D2 = Line 7	D1 = Line 8
E5 = Line 9	E4 = Line 10	E3 = GND	E2 = Line 9	E1 = Line 10

## ELECTRICAL SPECIFICATIONS AND CONDITIONS

**Table 2. PARAMETERS AND OPERATING CONDITIONS**

Parameter	Rating	Units
Storage Temperature Range	-55 to +150	°C
Operating Temperature Range	-40 to +85	°C
Power Dissipation at 70°C per Channel	60	mW

**Table 3. ELECTRICAL OPERATING CHARACTERISTICS** (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
R	Resistance		100	125	150	Ω
L	Inductance	(Note 2)		35		nH
C	Capacitance per Channel	At 1 MHz, $V_{IN} = 0$ V (Notes 2 and 3)	19	24	29	pF
		At 1 MHz, $V_{IN} = 2.5$ V		15		pF
Att(5)	Passband Attenuation at 5 MHz			-7		dB
$F_C$	Cut-off Frequency	$Z_{SOURCE} = 50 \Omega$ , $Z_{LOAD} = 50 \Omega$		250		MHz
$V_{BR}$	Breakdown Voltage	$I_R = \pm 1$ mA	±6	±7.8	±10	V
$I_{LEAK}$	Leakage Current per Channel	$V_{IN} = 3.0$ V		10	100	nA
$V_{ESD}$	ESD Peak Discharge Voltage Protection at All Pins: a) Contact Discharge per IEC 61000-4-2 standard b) Air Discharge per IEC 61000-4-2 standard	(Notes 2, 3 and 4)	±15			kV
			±15			

- All parameters specified at  $T_A = 25^\circ\text{C}$  unless otherwise noted.
- These parameters guaranteed by design.
- These parameters guaranteed by characterization.
- Standard IEC 61000-4-2 ( $C_{Discharge} = 150$  pF,  $R_{Discharge} = 330$  Ω).

# CM6400A

## RF CHARACTERISTICS

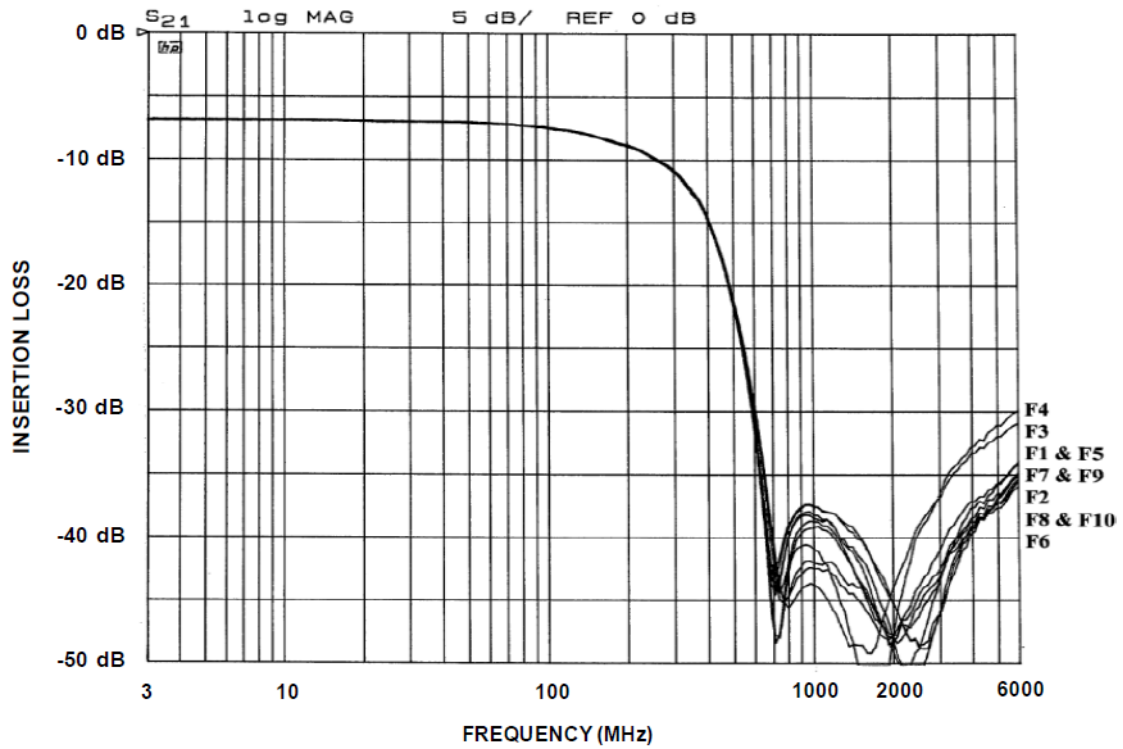
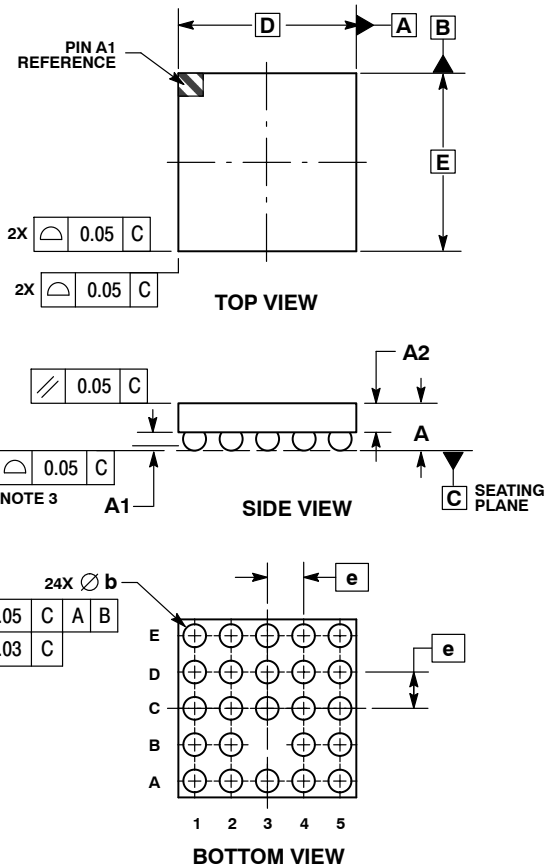


Figure 1. Typical Insertion Loss (Bias = 0 V,  $T_A = 25^\circ\text{C}$ , 50  $\Omega$  Environment)

# CM6400A

## PACKAGE DIMENSIONS

WLCSP24, 1.96x1.96  
CASE 567CK-01  
ISSUE O

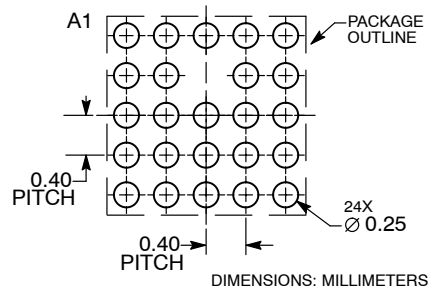


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.57	0.63
A1	0.17	0.24
A2	0.40 REF	
b	0.24	0.29
D	1.96 BSC	
E	1.96 BSC	
e	0.40 BSC	

**RECOMMENDED SOLDERING FOOTPRINT\***



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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